Reg. No. | | | | | | | | |

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.
(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., COMPUTER SCIENCE

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
II	PART - III	CORE-2	U23CS202	DATA STRUCTURES AND ALGORITHMS

Date & Session: 05.11.2024 / AN **Time : 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	Linked list is used to implement data structures like. a) Stacks b) Queues c) Trees d) All of these
CO1	K2	2.	If an array is declared as int arr[5][5], how many elements can it hold? a) 5 b) 25 c) 10 d) 0
CO1	K1	3.	Which function places an element on the stack? a) pop() b) push() c) peek() d) isEmpty()
CO1	K2	4.	The circular queue will be full only when. a) FRONT= MAX-1 and REAR = MAX-1 b) FRONT =0 and REAR = MAX - 1 c) FRONT = MAX-1 and REAR = 0 d) FRONT =0 and REAR = 0
CO1	K1	5.	Degree of a leaf node is. a) 0 b) 1 c) 2 d) 3
CO1	K2	6.	In the worst case, a binary search tree will take how much time to search an element? a) O(n) b) O (log n) c) $O(n^2)$ d) O (n log n)
CO1	K1	7.	How many nodes will be available in a tree with height=3? a) 0 b) 2 c) 1 d) 3
CO1	K2	8.	In which type of graph, every node has the same degree? a) Simple graph b) connected graph c) digraph d) regular graph
CO1	K1	9.	Which open addressing technique is free from clustering problems? a) Linear probing b) quadratic probing c) double hashing d) rehashing
CO1	K2	10.	Calculate the hash values of key 37 and Assume M is 11. a) 3 b) 4 c) 7 d) 33

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO2	K3	11a.	How would you do basic operations in a List. **(OR)**
CO2	K3	11b.	How would you explain about circular linked lists.
CO2	K3	12a.	Make use of stack convert the following infix expression to postfix. a -b * c + d. **(OR)**
CO2	K3	12b.	Clarify the reasons for why the stack is called as LIFO List.
CO3	K4	13a.	Analyse the structure of B tree. **(OR)**
CO3	K4	13b.	Examine the properties of Heap Tree.
CO3	K4	14a.	Compare Graph with Tree. **(OR)**
CO3	K4	14b.	How will you traverse a graph using Depth first method. Explicate with an example.
CO4	K5	15a.	What are the pros and cons of Hash function. **(OR)**
CO4	K5	15b.	Construct a program to perform bubble sort.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO2	K3	16a.	How would you perform deletion of first and last node in a doubly linked list. **(OR)**
CO2	K3	16b.	How would you explain the array-based implementation of linked list.
CO3	K4	17a.	Compare circular queue and priority queue. **(OR)**
CO3	K4	17b.	Examine the steps in evaluating arithmetic expression.
CO3	K4	18a.	Examine the different ways of tree traversing with example diagram. **(OR)**
CO3	K4	18b.	How will you construct a binary search tree. Explicate with an example.
CO4	K5	19a.	Assess the properties of Euler circuits. **(OR)**
CO4	K5	19b.	Discuss the application of graphs.
CO4	K5	20a.	Discuss the radix sort algorithm with example. **(OR)**
CO4	K5	20b.	Discuss the various hashing methods.